



# RF



## ORANGE COUNTY AMATEUR RADIO CLUB, INC.

VOL. LXVI NO. 3

PO Box 3454, Tustin, CA 92781

March 2025

### The Prez Sez... By Dan KI6X



In the last few years, I started trying another facet of amateur radio. My photo for this month is me with my 6M antenna. I bought this antenna from HRO mostly with a gift certificate won at an OCARC year-end party a few years ago. I was never much into VHF and above until recently and was licensed 15+ years before any 50 MHz or above. Did a couple VHF contests back then with a friend using equipment we borrowed and I built Quagis out of wood and wire. We went to Blue Ridge above Wrightwood a couple times and to Telescope Peak above Death Valley once. Some stories to tell about all the trips (weather, Park

Rangers, etc.). Later I got HTs for local emergency use at work or with the city where I live. Less than 10 years ago I got seriously into 6M. I built a Moxon which I used a couple years and then the antenna in the picture. I have 23 DXCC countries and 385 grids confirmed on 6M now and have enjoyed the effort. I have not had the European opening I have heard about that happens during a solar peak (my first peak for 6M). As I have told many people, there are so many facets of Amateur Radio that there is something for everyone. If you get tired of doing what you normally do or run out of new stuff to do in one area, there are other areas to learn and get involved.

Two notes for the month. 1) Field Day planning is just starting so keep June 28-29 (and Friday the 27<sup>th</sup> for set-up) open to help out or just visit the site and enjoy the excitement and see what all the fuss is about. 2) We reserve some time at the end of the monthly general meetings for "Show and Tell". You are welcome to bring something in and show and tell about it. 5 minutes is sufficient and people can ask questions at the time or visit with you after the meeting.

Dan Violette, KI6X  
President

### NEXT GENERAL MEETING

**Michael Rickey  
AF6FB  
presents**

### "Meshtastic Network"

**March 21<sup>st</sup>, 2025, at 7pm  
at the  
American Red  
Cross**

**Orange County Chapter  
Santa Ana, Room 208**

### NEXT BOARD MEETING

**Saturday, April 5<sup>th</sup>, 2025  
See [www.w6ze.org](http://www.w6ze.org) for more info**

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#### 2025 Club Appointments

#### **W6ZE Club License Trustee**

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[n6tmt@w6ze.org](mailto:n6tmt@w6ze.org)

#### **HAM License Testing**

(before regular meetings)  
 Ken Simpson, W6KOS  
 (714) 651-6535  
[w6kos@w6ze.org](mailto:w6kos@w6ze.org)

#### **ARRL Awards Appointee**

Arnie Shatz, N6HC  
 (714) 573-2965  
[n6hc@w6ze.org](mailto:n6hc@w6ze.org)

#### Monthly Events

#### **Membership Meetings\***

Time: 7:00 PM  
 When: 3<sup>rd</sup> Friday of each Month  
 Red Cross Orange County, Room 208  
 600 N Parkcenter Dr, Santa Ana  
 (Replaced by the Christmas Party  
 in December.)

#### **Board Meetings**

First Saturday of each Month  
*Board will handle Club business now IN-PERSON.*

#### **Club Nets (Listen for W6ZE)**

##### **10M ~ 28.375 MHz SSB**

Wed- 7:30 PM - 8:30 PM  
 Net Control: Corey, KE6YHX  
 Alternate Net Control: AJ, KN6WNO

##### **2M ~ 146.55 MHz Simplex FM**

Wed- 8:30 PM - 9:00 PM  
 Net Control: Corey, KE6YHX  
 Alternate Net Control: AJ, KN6WNO  
 Echolink Node: KK6TRC-L

##### **75M ~ 3.883 MHz LSB**

Tue @ 8:00 PM  
 Net Control: Corey, KE6YHX

#### **Other Nets**

#### **Catalina Amateur Repeater Association (CARA)**

**147.090 MHz (+0.600 MHz) No PL**  
 Monday - Friday  
 9:00AM & 9:00PM  
**Prg. Director. Tom W6ETC**  
**COME JOIN US**

#### **OCARC 2025 DUES:**

*Membership period is:  
 1 January to 31 December*

Individual New or Renewal: \$30  
 Family New or Renewal: \$45  
 Teen New or Renewal: \$15

*New Member Dues are prorated quarterly and includes a badge:  
 Additional Badges<sup>1</sup> \$3*

Use one of our interactive online forms to calculate current prices, join, renew, or order badges:

<https://www.w6ze.org/FormsShortcut.html>

<sup>1</sup> \$3 or less + mailing. See form.

## March Speaker – Michael Rickey AF6FB Meshtastic Networks



Michael (AF6FB) has been a ham since his Junior year in high school, originally licensed in 1981. Later earning General and Extra class licenses. He has worked with MESAC (in Costa Mesa) and Red Cross. Now he focuses most of his time on The PAPA System. Michael has worked primarily in VHF and UHF (both analog and digital voice), but has experience with HF and many of the digital modes used on HF. Michael currently resides in Perris, Ca.

Michael's professional background includes software development, tech support, quality control, project management, and some retail sales. More recently Michael has been working with the MMDVM Project to further their work.

Michael has become interested in projects like M17 and Meshtastic. You will frequently hear Michael on the PAPA System using analog, DMR, or P25. In fact, Michael spoke at our club in 2017 about the PAPA System.

Michael will be discussing Meshtastic and how it can be used as a messaging and location tracking system. Meshtastic offers a license free system that can be used to hams and non-hams alike. However, using it with a ham license gives us more capabilities like more power. There is a robust network of relay stations that extends coverage over wide areas. Commonly used by families, groups, and clubs to stay in communications during gatherings, trips, events, and even disasters. Topics will include an overview of Meshtastic, devices, software, and more.



## OCARC VE TESTING

Your Club, W6ZE, now offers license exam testing sessions (new licensees and upgrades) at 5:30 PM before our regularly scheduled meeting at 7 PM. Requests for a seat should be sent to Ken Simpson, w6kos@w6ze.org, or a call at 714-651-6535. The cost is \$15.

That's 5:30 p.m. for testing in Room 213 and a 7 p.m. meeting at 600 Parkcenter Dr, Room 208, Santa Ana, at the American Red Cross.

## DUES DEADLINE MARCH 31



FYI, March 31 is the deadline for the 2025 OCARC dues. The membership roster will be updated April 1, no fooling, listing only payed up members. Those who renew after March 31 will have their names added to the membership roster. Renewal dues are \$30 no matter what day they are received and will only be applied towards 2025 membership, in other words, no partial payment covering only the remainder of 2025. If there is a checkmark next to the number by your name in the roster, then you have PAID for 2025.

## New OCARC Members

### 2025

**JANUARY**

- AK6AT Michael Porteous
- W6VLN Daphne Tsao
- KO6HKD Nathaniel Locket

**FEBRUARY**

- NC6M Anatoly Ananovsky
- N6MG Milton Garb
- K6MKL Michael Berchtold
- W6NVI Carolyn Berchtold
- KN6WPB Thom Belford

**Introductions from New Members,****N6MG Milt**

My interests are in DX'ing and POTA. I've been licensed since 1970 and I'm still enjoying some CW and, every year, a lot of Field Day. I look forward to meeting new friends, and visiting with old friends in the OCARC.

73, de Milton, N6MG

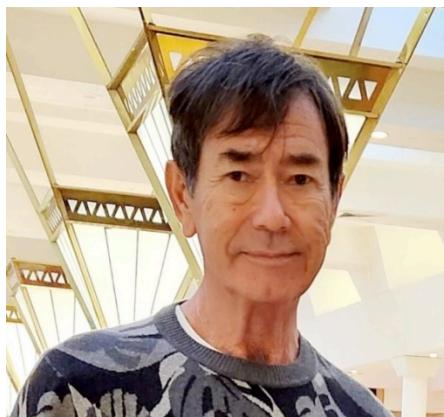
**NC6M Anatoly**

Hello All,

I am a retired electrical engineer. During last 25 years of my career I have designed linear (analog) integrated circuits for several companies in Silicon Valley (Samsung, Plessey, ST Micro and others). I also worked (Philips Ultrasound and Silicon Systems) in Orange County in 80-90s.

I have passed my ham examinations for Technician, General and Extra licenses on Nov 10, 2018. In my previous QTH on Sonoma Coast (in The Sea Ranch) I have encountered antenna installation problems with my HOA. I anticipate another round of antenna issues in my current QTH in Huntington Beach. For this reason I have not set up my shack yet. I will be seeking our member's advice and guidance on grounding, counterpoise and stealth antennas subjects.

I am looking forward to meeting all of you in person soon.

**KN6WPB Thom**

I am a retired executive who spent 40 plus years working in the Television and Film Industry mostly developing products with companies like Sony electronics. I spend some of my time these days editing videos for a few non-profit groups, walking our 2 dogs, cooking, and have become quite domesticated. Currently I am assisting our Irvine Public Safety Dept. with classes helping around 40 fellow CERT members working to get their Technician License. I got my ham license so that I could one day join Irvine IDEC. At this point I have yet to join IDEC, but I look forward to many good times and experiences as an active member of OCARC

# RadioActivity

## March 2025

### Upcoming Activities:

#### MARCH

- Russian DX Contest:** 1200 UTC Saturday March 15 through 1200 UTC Sunday March 16
- \*CQ WW WPX / SSB:** 0000 UTC Saturday March 29 through 2359 UTC Sunday March 30

#### APRIL

- JI CW Contest:** 0700 UTC April 12 to 01300 UTC April 13
- World Wide Holyland DX Contest, SSB & CW:** 2100 UTC April 18 to 2059 UTC April 19
- ARRL Rookie Roundup, SSB:** 1800 UTC to 2359 UTC April 13
- 10-10 Int. Spring Contest, Digital:** 0001 UTC April 26 to 2359 UTC April 27

\* Indicates club entries are accepted

\*\* Indicates team entries are accepted

Note: When submitting logs for ARRL Contests indicate your club affiliation as "Orange County ARC"

### State QSO Parties:

- Louisiana QSO Party:** 1400 UTC April 5 to 0200 UTC Sunday April 6
- Mississippi QSO Party:** 1400 UTC April 5 to 0200 UTC Sunday April 6
- Missouri QSO Party:** 1400 UTC Saturday March 5 to 0400 UTC Sunday March 6 and 1400 UTC to 2000 UTC Sunday March 6
- New Mexico QSO Party:** 1400 UTC April 12 to 0200 UTC Sunday April 13
- Georgia QSO Party:** 1800 UTC April 12 to 0359 UTC April 13 and 1400 UTC to 2359 UTC Sunday April 13
- Nebraska QSO Party:** 1100 UTC to 2259 Saturday April 19
- North Dakota QSO Party:** 1800 UTC Saturday April 12 to 1800 UTC April 13

### Repeating Activities:

- Phone Fry:** Every Tuesday night at 0230Z to 0300Z
- SKCC:** Weekend Sprintathon (Straight Key CW) on the first weekend of the month after the 6<sup>TH</sup> of the month. 1200 Sat. to 2359Z Sunday.
- SKCC:** Sprint (Straight Key CW) 0000Z to 0200Z on the 4<sup>th</sup> Tuesday night (USA) of the month.
- CWops:** Every Wednesday 1300 UTC to 1400 UTC 1900 UTC to 2000 UTC and Thursday 0300 UTC to 0400 UTC
- ICWC Medium Speed Test:** (CW, 25WPM Max.) Every Monday 1300 UTC to 1400 UTC 1900 UTC to 2000 UTC and Tuesday 0300 UTC to 0400 UTC
- K1USN Slow Speed Test:** (CW, 20WPM Max.) Every Friday 2000 UTC to 2100 UTC Every Sunday night at 0000 UTC to 0100 UTC Monday

### OCARC Club Nets:

- 10 Meter Net:** Every Wednesday night at 7:30 pm to 8:30 pm Local Time. SSB 28.375 MHz
- 2 Meter Net:** Every Wednesday night at 8:30 pm to 9:30 pm Local Time. FM Simplex 146.55 MHz

### Other Nets:

- Net-AT-9:** Wellness & Support Monday thru Friday 9:00 am and 9:00 pm Local Time 147.090 MHz (+600 MHz) No PL

### Other Links:

- [ARRL Contest Calendar](#)
- [VOACAP Online for Ham Radio](#)

Send an email to Ron W6WG, [w6wg@w6ze.org](mailto:w6wg@w6ze.org) to have your favorite activity or your recent RadioActivity listed in next month's column

## General Meeting Minutes

### February 21, 2025

The meeting began with the Pledge of Allegiance.

Everyone in attendance took a moment to introduce themselves.

Tim N6GP Vice-President introduced tonight's speaker Neil Jessen N6VHF.

He presented a very interesting and informative program regarding Parks on the Air. He also brought his antenna and demonstrated how to use, explaining how to easily set up in a park with your vehicle, and how to register with Parks on the Air. Many questions were posed and answered.

After a break the meeting continued with club business.

#### **Board Meeting**

A quorum of club members were in attendance.

Tim N6GP, VP, reports in March Michael AF6FB will present a program on Meshtastic networks/devices.

Tim N6TMT, Treasurer, reported our cash flows are good.

Ron W6WG, Membership, reports we have 110 members, 76 which are paid up for 2025, and dues need to be paid by the end of March to keep status.

Janet KL7MF, Director-at-Large, reports she went to some Hamfests recently which were interesting. There will be a Hamfest in April in Big Bear.

#### **Ask the Elmer**

We had good discussions regarding SWR, its definition, and how it can change along a transmission line.

#### **Good of the Club**

We are happy that Ken Simpson W6KOS is recovering from his hospital visit and continues to provide VE sessions monthly prior to our general meeting.

8:55 Motion to adjourn made, seconded and passed.

Corey KE6YHX, Activities, provided snacks and set up an Opportunity Drawing which everyone enjoyed, we had 39 members in attendance.

Submitted by Joyce KN6UKJ

## Board Meeting Minutes

### March 1, 2025

The OCARC board meeting was held at the Streamliner Lounge, 186 N. Atchison St. Orange, and was called to order by President Dan Violette KI6X at 8:15 am. A quorum of Board Members were in attendance.

#### **Directors Reports**

Treasurer Report: Tim M. N6TMT reports \$1529 income and out flows \$560.11.

Membership Report: Ron W6WG reports the club now has 113 members, with 3 honorary members. 84 members have paid for 2025. Ron to notify and remind other members that dues are due by the end of March.

Activities Report: Corey KE6YHX is bringing snacks for our club meetings, and will set up an opportunity drawing about every other month after our club meeting.

Publicity Report: AJ W6OTO reports he is working on templates for our club Facebook page, and will be taking new brochures to HRO etc which also now has a "QR" code on it, and also discussed business cards. AJ is also working on setting up digital modes for the weekly net.

VE sessions for amateur radio licensing continue monthly prior to our club meetings under the guidance of Ken W6KOS.

Secretary report: The club is now being notified via informed delivery of any mail that comes in.

#### **Club Monthly Planner Review**

Discussed planning for Summer Field Day June 28-29, Ron W6WG to check out the site, and we plan to have a plan B in place in case of extreme weather changes.

#### **Old Business**

Newsletters Editors Report

March: Tim N6GP, April: Bob AF6C, May: To be determined

Speakers/Entertainment:

March: Michael Rickey AF6FB will present on Meshtastic which uses long range radio protocol

April: Janet KL7MF is working on securing entertainment

#### **New Business**

Discussion was held regarding our PayPal accounts, Nick AF6CF will follow up to make sure automatic payments go to Quicken accounting.

#### **Good of the Club**

AJ W6OTO suggested for one of our monthly meetings we have an open discussion and maybe bring in our equipment to do a "show and tell" Ron W6WG suggested maybe a "Member of the Month" and he is also trying to provide help to new members to our club and new licensees. California-wide Disaster Simulation Exercise CalDART will be held Saturday April 26 2025. Janet KL7MF reports there is a hamfest in Big Bear April 25-26.

An adjournment was voted on and agreed at 9:30.

Submitted by Joyce KN6UKJ.

# Homebrewing a Satellite Antenna

## by Ron Mudry W6WG

Last fall the updated 2025 Winter Field Day guidelines were released with some interesting changes. The change that really caught my attention was the new emphasis on satellite contacts and their values as multipliers. Making one FM satellite contact was a x2 multiplier and a single SSB satellite contact was now a x3 multiplier. Five out of the possible twenty-six multipliers was something that couldn't be overlooked. Operating in WFD and building antennas are two of the many things that I enjoy about our hobby. I have built dipoles, verticals, yagis, hexbeams, and satellite antennas before, so I felt up to the challenge of getting the five multipliers in the next WFD.

In this article, I want to go through the steps I have taken to make those contacts and with the hope other club members may also give satellites a try. You can always buy a commercially built antenna, but I feel it's not the same as homebrewing your own antenna. Antenna construction is well within the capabilities of the average ham.

To begin, there are a group of Low Earth Orbit satellites which can be accessed with a handheld antenna and low power, five to ten watts. Of these satellites there are those that use the FM and SSB modes that I had hoped to use during WFD. The bands that are commonly used for the LEO satellites are the 2 meter and 70 centimeter bands. As an example, the FM uplink to the ISS is 145.990 MHz (2 meters) and the downlink is 437.800 MHz (70 centimeters). Other satellites use the same band format or 70 centimeters up and 2 meters down or vice versa. When designing the antennas, I decided to use the ISS frequencies of 145.950 MHz and 436.250 MHz as a good compromise for all the intended target satellites. With the frequencies selected, I then went to the website of K7MEM to use his online calculator to determine element lengths and spacing. I wanted an antenna that could be hand held with as much gain as I could get with a boom length of approximately five feet. Looking at the aluminum I already had on hand I was able to design the antenna's elements to use up my supply and only having to buy the boom material. For mounting the elements to the boom I chose to insulate the elements from the boom. Using the online calculator I was able to produce the two designs shown below. I like working in metric rather than with feet, inches and fractions of an inch, less chance of an addition or subtraction error.

Antenna Dimensions			Metric
Cumulative Spacing	Element	Element Length	
Zero	REFL	342.22	
137.44	D.E.	321.89	
188.98	D1	298.25	
312.68	D2	294.13	
460.43	D3	289.77	
632.23	D4	285.69	
824.65	D5	282.14	
1030.81	D6	279.09	
1247.28	D7	276.45	
1474.05	D8	274.14	

**Design Information**

436.25 MHz, 10 Elements, 11.787 dBd Estimated Gain  
 37.2 Degrees Horizontal Beam Width  
 39.3 Degrees Vertical Beam Width  
 19.05 mm Diameter Metalic Boom, Bonded Elements.  
 Boom Correction of 0.5225 applied.  
 Electrical Boom Length of 1524.0mm.  
 Allow for overhang when cutting boom to length.  
 Driven Element Diameter = 12.7mm  
 Parasitic Element Diameter = 9.65mm  
 Suggested Stacking Distance for 2 Yagis:  
 941.5mm Horizontally  
 891.7mm Vertically  
 Dimensional tolerance required = 2.06mm

Antenna Dimensions		
Cumulative Spacing	Element	Element Length
Zero	REFL	1005.78
410.82	D.E.	983.62
564.87	D1	906.62
934.61	D2	897.56
1376.23	D3	887.46

**Design Information**

145.950 MHz, 5 Elements, 7.842 dBd Estimated Gain  
 52.0 Degrees Horizontal Beam Width  
 58.0 Degrees Vertical Beam Width  
 19.05 mm Diameter Metalic Boom, Bonded Elements.  
 Boom Correction of 0.214 applied.  
 Electrical Boom Length of 1524.0mm.  
 Allow for overhang when cutting boom to length.  
 Driven Element Diameter = 12.7mm  
 Parasitic Element Diameter = 9.65mm  
 Suggested Stacking Distance for 2 Yagis:  
 2013.3mm Horizontally  
 1807.2mm Vertically  
 Dimensional tolerance required = 6.16mm

Step 1. The first step in construction was to cut all the elements as close as possible to the calculated lengths, trying to be within .5 millimeters. I figured with all the inaccuracies I may introduce in the project, I should be as accurate as possible when cutting the element lengths and measuring the mounting distances between elements along the boom.

Mounting the elements. Keeping within the homebrewing theme, I decided to make my own mounting "hardware".

Step 2. I drew the element mounts in 3D with AutoCad.

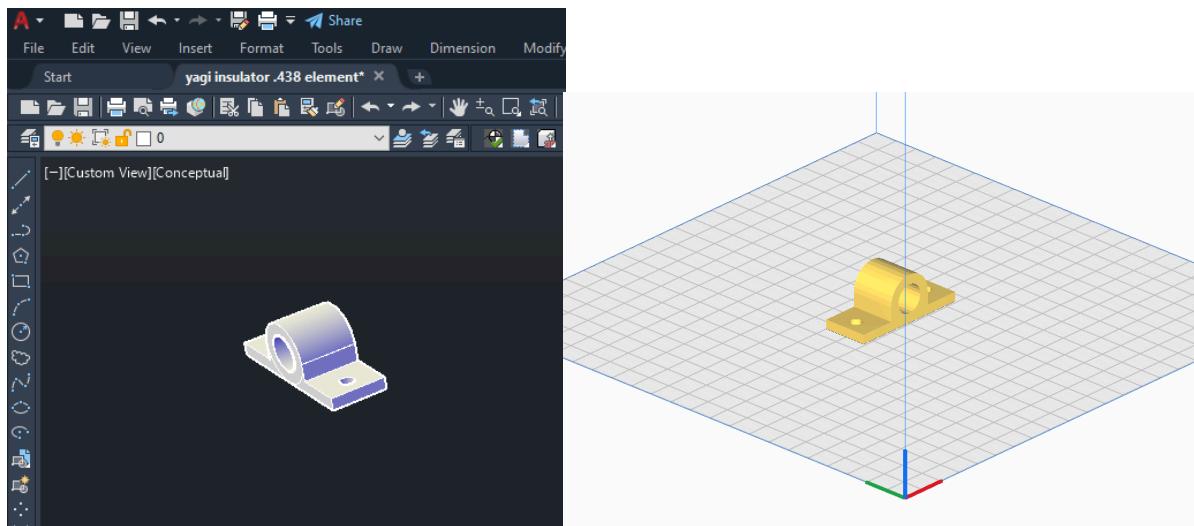
Step 3. I loaded the cad file into a slicing program "UltiMaker Cura", which created a file to run my 3D printer.

Step 4. 3D printing of the mounts.

Step 5. Assembling elements and mounts

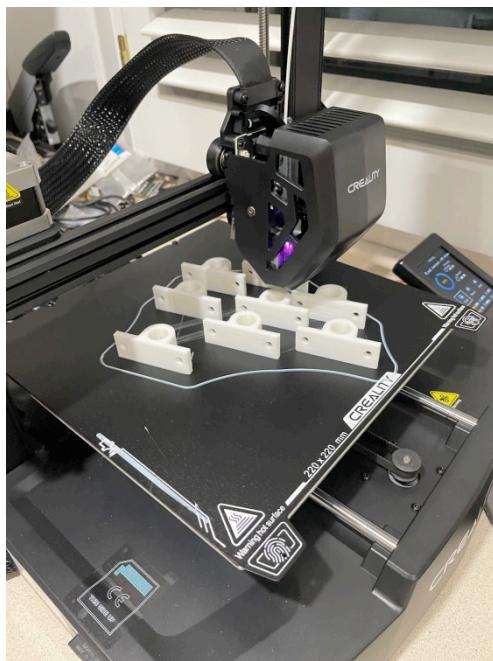
Step 6. Attaching the elements to the boom with pop rivets.

Step 7. Attaching the coax to the driven elements.



Step 2. AutoCad

Step 3. UltiMaker Cura



Step 4. 3D Printing



Step 5. Assembling elements and mounts



Step 6. Attaching to the boom.



Step 7. Attaching the coax to the driven elements.



Completed yagis. Hope they work!!!!



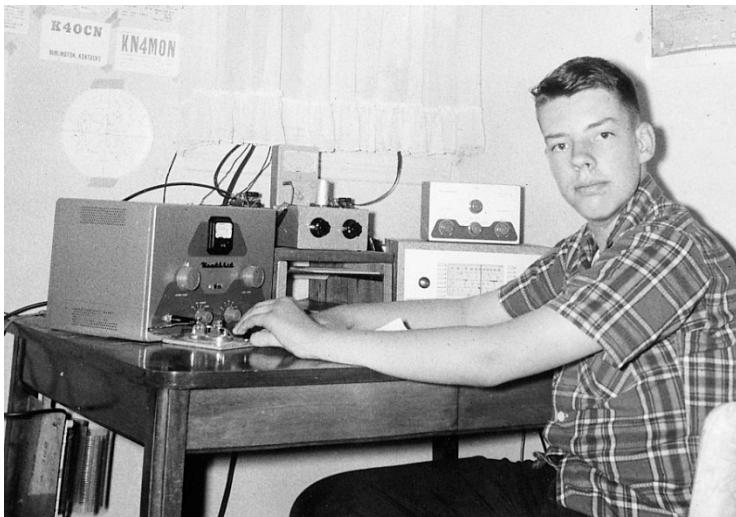
Looking good on 2 meters □ SWR 1.2 to 1

For my first attempt with the new antenna, I chose an ISS pass that went directly overhead. Since I have a couple of Baofang UV-5Rs that I had won in our club raffles I thought I would use one for the uplink and one for the downlink. The frequency information was programmed into both transceivers; I would be full duplex. On the receive radio I have a splitter to a digital recorder and my headphones. As the ISS cleared the horizon I could hear KB6LTY load on the 440 band. Now I'm getting excited and fumbling around with two radios, a recorder, hand mic and my phone, which is indicating exactly where the ISS is located (a great app to have), and trying to point the antenna. I'm thinking I'm glad no one is watching this LID. I keyed the mic and called out "W6WG DMO3" and I hear nothing..... "W6WG DMO3" again and again, nothing heard. The nice thing is the satellite passes overhead rather quickly and now it was gone. Now beyond the horizon there was time to think "What Happened, he was so loud". As I looked around, there it was, somehow I must have stepped on the cord to the headphones, and the plug was just lying on the ground disconnected. No wonder why everything was so quiet.

After putting everything away, I went inside and listened to the recording. I could hear "W6WG KB6LTY DM14" "W6WG KB6LTY DM14" she had heard me, but she had heard no reply from me. I hoped she was now thinking to herself "What Happened, he was so loud"

73, Ron W6WG

# HAM RADIO SINCE 1957: AN EYEWITNESS ACCOUNT



The author, N6NB (then K6YNB) at age 14 in late 1957 at my first station. It used only vacuum tubes for all functions. The station featured a Heathkit DX35 transmitter and AR-3 Receiver.

By Wayne  
Overbeck, N6NB  
Guest  
Contributor

This is a story about the hobby of amateur radio, written for both licensed "hams" and others. I'll try to define jargon when I use it and explain processes as clearly as possible in a world of complexity. I've taken on this endeavor to share some of what I've seen in my 68

years of ham radio. I was first licensed at age 14 in 1957.

Ham radio itself is amateur. No business activity by hams using amateur radio frequencies is allowed, although many use the skills they learned as hams to gain employment in profit-seeking endeavors. What constitutes business activity is often disputed.

The use of the term "ham radio" can be tracked back more than 100 years, although there is disagreement about how amateur radio operators came to be called "hams". There are about 700,000 licensed amateur radio operators in the United States, although fewer than half of them are on the air.

I was licensed by the U.S. Federal Communications Commission and given a "call sign" in March of 1957 (check out the accompanying photo to see my station and me in 1957 when I was 14 years old). There is more about call signs, including my call sign history later.

The FCC issues call signs to on-the-air broadcasters, "land mobile" systems (for example, a fleet of trucks), aircraft owners and many others who are authorized to transmit a radio or television signal on the air. Cable television networks do not transmit over the air and are only indirectly regulated by the FCC, freeing them from many federal regulations including restrictions on their language and content.

When I got on the air in 1957, ham radio was dominated by veterans who had learned about radio technology in the military. World War II had ended less than 12 years earlier and the Korean War ended not even four years earlier. The veterans were called "the greatest generation" in a book title by award-winning television journalist Tom Brokaw. Some members of "the greatest generation" had little sympathy for teen-agers like me who were trying to learn from them. Ham radio operators were (and are) known for their concept of "elmering" (helping beginners) but not all of the veterans wanted to be elmers.

## WAR STORIES

In the early postwar era, there were many war stories circulating. One of the best, I think, was about a wartime incident in the South Pacific. An American unit was looking for individual Japanese soldiers who could be captured and questioned. An American who happened to be a ham radio operator back home (although hams were forbidden to transmit during the war) managed to surprise and tackle a Japanese soldier. As the soldier went down, a copy of "QST", the magazine published by ARRL, the national association of U.S. ham radio operators, fell out of his pocket. One of the first things the American asked the now-captured Japanese soldier was if he had a call sign. In good English, the Japanese man gave a call sign that was consistent with the prewar call-sign policies in Imperial Japan. Some versions of this story say the American and the Japanese man had "worked" (contacted) each other before the war. That they would remember such a contact in the middle of a war struck me as unlikely. Granted, U.S. hams had made numerous overseas contacts before the war, but most of those were by the impersonal mode of "Morse" code, not by voice. Morse code was made famous for modern viewers by James Cameron's 1997 film, *Titanic*, which depicted the heroism of a Morse operator who remained on the air as the ship sank after hitting an iceberg.

ARRL was originally called the American Radio Relay League and the acronym survived long

after relaying "radiograms" by Morse code ceased to be the dominant interest of most hams.

By the time I got on the air in 1957, Morse code was in decline everywhere except amateur radio. Even among hams, the use of Morse tanked after the FCC and regulators in many other countries dropped Morse testing from license exams. The FCC dropped Morse because it was seen as irrelevant in this era of high quality worldwide digital communications and satellites. Ironically, those digital technologies also contributed to a

**Figure 2** The author's house in Manhattan Beach CA in the late 1950's. Note cubical quad and unpaved streets

decline in the appeal of worldwide ham radio communications via Morse and "phone" (voice). However, digital technology also made the use of "WSJT" attractive to thousands of hams. "WSJT" is a digital mode largely created by Dr. Joe Taylor, former provost at Princeton University and a Nobel laureate in physics. It is distributed for free on Princeton's website. It makes a home computer into a very sensitive digital communications terminal. It has associated modes for uses such as high-speed meteor scatter (use of meteors entering the Earth's atmosphere to create communications over paths of up to about 1,500 miles), and e.m.e. (earth-moon-earth or

"moonbounce" communications) by detecting weak signals reflecting off the moon's surface over paths of up to 500,000 miles round trip.

### A HAM RADIO VOYAGE THROUGH TIME

In my first year on the air I used the prevailing modes of the day (Morse code and voice) with the station shown in the photo. It was called a "novice" station because such stations were often used by people who held the FCC's one-year "novice" license (since abolished) and were strapped for cash. It was capable of spanning surprising distances, especially during peaks of the 11-year solar sunspot cycle that enhances global propagation. One of the best sunspot cycles ever, Cycle 19, peaked in 1957-58. I was lucky, but I didn't know that until later. The cycle numbers can be traced back to the 1700s, when scientists first started counting sunspots and quickly determined that there is an 11-year cycle of peaks and valleys. It was discovered in the early 1900s that the solar sunspot peaks correlate with dramatic improvements in radio propagation.

By the end of my novice license term of one year (actually four months in my case) I had passed

the exam for a general class license. Freed of the restrictions on the use of voice by novice class licensees, I began to follow my friends who were fellow former novices. Even back then ham radio fell into several categories. Some loved "working DX" (making long distance contacts) and would earn DXCC (an award granted by ARRL to those who contacted 100 countries and submitted proof of their achievement) before these young hams went off to college.



Figure 3 Wayne N6NB at his station in 1967. He had a Drake TR-3, Hallicrafters SX-101 Receiver and a Henry 2K amp. His daughter was already getting interested in radio before her first birthday.

license my call was automatically shortened to K6YNB. I kept that call until 1977 when I held an extra class license. At that point the FCC allowed most extra class licensees to choose their own call sign from a list of preferred "1x2" and "2x1" calls. I selected N6NB (a 1x2 call). I've now held N6NB for almost 50 years. After the FCC's first vanity call sign program ended, a friend was assigned KC6A, a 2x1 call. Now all 1x2 and 2x1 calls have been taken and anyone who wants one has to watch for a "silent keys" listing in ARRL's QST magazine (or learns about a ham's passing in some other way) and pounces as soon as a waiting period ends. The FCC has a new vanity call sign program now; any ham who wants a particular available call (and qualifies by license class) can get it by paying a small fee. The complexity of this call sign system shows how important a ham's call is to his/her identity on the air.

### ABOUT CALL SIGNS

My first call sign reflected my novice status. It was KN6YNB, when I got my general class

## DEFINITIONS AND CONTESTS

One term that is often used in this article is "MHz". It stands for megaHertz and is named in honor of German physicist Heinrich Hertz, who proved the existence of radio waves in the late 1800s.

By the late 1950s, some hams were not only excited about working DX but also operating in "radio contests" sponsored by ARRL and other organizations. A radio contest is an operating event in which hams try to contact as many other stations in as many geographic entities as possible, with their scores determined by multiplying their number of contacts by the number of geographic entities ("multipliers"). Having a lot of multipliers results in a much higher score than would be possible if the operator only sought to make contacts at a high "rate", ignoring the effects of a low multiplier total. Multipliers are usually geographic entities like countries or states.

In some VHF (very high frequency) contests the multipliers are called "grid squares" and they are one degree of latitude by two degrees of longitude in size (about 60 by 120 miles in most of the U.S.) and become much smaller near the north and south poles. Grid squares are mainly used on the highest frequencies and the shortest wavelengths, like six meters (50 MHz), two meters (144 MHz) or 70 centimeters (432 MHz). The higher the frequency, the shorter the wavelength is. On a wavelength of 3 centimeters (10,000 MHz), any contact is considered a technical achievement. At that frequency multipliers are available that are unavailable to those who only have lower frequencies. There is a microwave incentive built into the rules for some contests, rewarding those who build reliable equipment for the microwave bands with higher scores. Each multiplier is counted on a given band and is counted again if the operator contacts that grid square again on another band.



Figure 4 Six gavels won by the Southern California Contest Club in VHF/UHF Contests, along with a grid map

There are other details of contest rules that can affect some hams' scores. Radio clubs have been a major feature of ham radio since its beginning. Clubs provide a place for hams to meet each other and they also host guest speakers on many topics. I was a frequent guest speaker when I was an elected vice director of ARRL. In many contests there is a club "aggregate" competition in which all members can submit their scores to their club's total score as well as having them listed individually in the contest sponsor's results. This club competition is hotly contested. Some clubs such as the Potomac Valley Radio Club have dominated the club competition for many years, fighting off various challengers for top honors. In contests there are categories including

single operator (one licensed operator) and multioperator (two or more licensed operators). Both are eligible to participate in the club competition.

In addition to local and regional clubs there are nationwide organizations such as ARRL in the U.S. and RSGB (the Radio Society of Great Britain) in the U.K. Almost all countries have such organizations. For example, there is NZART (the New Zealand Association of Radio Transmitters) and DARC (the Deutscher Amateur Radio Club) in Germany, among many others. On top of all that, there are international entities such as IARU (the International Amateur Radio Union). All play a role in representing the interests of amateur radio at worldwide conferences that determine how much of the radio spectrum is left for amateur radio use. Those who oppose the hams are usually powerful international companies that would leave almost none of the spectrum to hobbyists.

### **REDUCING THE TVI/RFI PROBLEM**

In the 1950s there was a huge problem that isn't even a minor problem for most modern-day radio amateurs: TVI (television interference) and RFI (interference to other electronic devices). When I got on the air in 1957, dealing with angry neighbors was a daily reality. As a young ham, I was an easy target. My 35-watt AM transmitter wiped out neighbors' TV reception. Many people owned older TV sets with 21 MHz IFs (intermediate frequencies) that were great at picking up signals on the 15-meter band (21 MHz). At first I was safer because novice hams were only allowed to use Morse code on 15 meters. But when I passed my general class license exam and got on phone there was hell in the neighborhood. Irate people formed mobs and stormed my house, terrifying my parents. Several times bags of human excrement ruptured on the driveway. Some called the local FCC office to complain. The FCC's standard answer was that only TV sets of good engineering design were protected from TVI from nearby hams---even young ones. That infuriated my neighbors.

A few years later I moved to my own house to be closer to my first college teaching job. I bought a tower and a kilowatt rig. I was more conspicuous and the neighbors were even angrier. My neighbors gathered at my door and circulated petitions to the FCC, but advances in technology saved many hams, including me. Many more TV sets were of good engineering design. In fact, both receivers and transmitters got better. Many TV sets and other home electronic devices became better at rejecting out-of-band (but strong) local signals. Transmitters were filtered to suppress in-band but spurious signals on frequencies used by broadcasters. A reality that often went unspoken was that in the 1950s some transmitters had excessive spurious signals on TV channels. Broadcasters also migrated to higher frequencies further away from the most popular ham bands when digital TV arrived. Cable systems with proper shielding provided another barrier to TVI complaints. ARRL staff members and the ARRL lab provided good support to hams. The lab tested ham transmitters and published the results. TVI became a footnote in the history of ham radio, not a nightmare.

### **EMCOMM AND REPEATERS**

Emergency communications (now called "emcomm") was a popular sub-interest within amateur radio from its early days. It involves hams using their portable radio equipment (which has changed a lot) to provide communications at the scene of fires, earthquakes, hurricanes and many other natural disasters. These days access to those events is strictly regulated and hams often

provide public service communications at events such as bike races, marathons, and parades. But when first responders' own radio networks and cellphones fail, they may welcome help from hams, whose ham-to-ham communications are so infrastructure-free that they function well when all else fails.

Today hams use low-power hand-held radios with "rubber duck" antennas that only have a short range, especially in cities and wooded areas. These small radios would be almost useless without repeaters, often located on mountaintops or tall buildings. Repeaters can hear weak signals and retransmit them at much higher power and better antennas, extending the range from a few miles to an entire metropolitan area. Despite that, repeaters are banned in most radio contests precisely because of their range-extending capability. Those who have invested a lot of time and money in building their own big stations do not want their efforts nullified by small stations using repeaters. When repeaters first moved from commercial users to hams in the 1970s they were widely used to keep members of a club or community in touch. Almost everyone wanted to have a repeater back then, but over time activity dwindled and many repeaters went off the air.

### HAM RADIO THEN AND NOW

When I first got on the air in 1957, ham radio was barely 50 years old. Activity patterns were about to change dramatically as technology advanced. Many modern uses of radio did not exist in the early days. The 1950s saw the near abandonment of amplitude modulation (AM) and its replacement by frequency modulation (FM) and single sideband (SSB). Radio pioneer Edwin Howard Armstrong famously demonstrated the superiority of FM over AM for the broadcasting of music because of its immunity to the noise (static) that plagued AM listeners. FM replaced

AM as the leading source of broadcast music after World War II. By the 1950s it proved its superiority for voice use as well.



Figure 5 This is the actual Hawaiian site from which he worked the mainland on six bands, setting new DX records on 902 MHz, and 2.3 and 3.4 GHz, using the tropospheric duct that enables long distance contacts on what are normally local bands. He flew to the big island of Hawaii six times in 2014-2016, hauling three overweight suitcases and spending extra money for luggage.

SSB had been in use for expensive point-to-point voice communication systems in the 1930s. It was clearly superior to AM for long-distance communications. SSB got its name from the fact that it is possible to suppress one of the two voice sidebands and all of the carrier (the part of an AM signal you can hear over the air), leaving about four times the power and half the bandwidth in the

remaining signal. It was also shown quickly that a given transmitter could be operated at several times its AM power because of the low duty cycle of SSB.

Postwar advances in technology made SSB affordable to ham radio operators. Manufacturers began making equipment for the amateur market in the 1950s. But when I operated in "phone sweepstakes" in 1959 almost all of the activity was still on traditional AM. I finished second in the Los Angeles section without even owning a transmitter capable of SSB. (The ham who beat me was number two nationally). However, by 1965 almost all activity was on SSB, not AM. AM transmitters came to be called "boat anchors" because they needed heavy modulation transformers not needed for SSB.

### **VACUUM TUBES, TRANSISTORS AND CHIPS**

No change in radio technology was more profound than the transition from vacuum tubes to transistors and then to chips. Vacuum tubes were large, power-hungry glass objects that glowed in the dark. Tubes helped the radio pioneers make global two-way contacts before 1910 and they also made my first station work. The 1957 photo of my station showed nothing that didn't use vacuum tubes. That was the end of an era. I bought my first transistor radio in 1959. It covered the AM broadcast band and several shortwave bands but it could not copy SSB or Morse code signals. That radio quickly became obsolete. By the mid-1960s several manufacturers were making all-solid-state transceivers (radios that have a transmitter and a receiver in one box). Although some still used vacuum tubes during this transitional period, the trend was clearly away from tubes. Manufacturers were not only making transistor radios but also radios using large scale integration. LSI involves combining many transistors of various types in one small package. Modern "chips" have hundreds or thousands of transistors that all function together to make a cellphone or a car work as intended.

By the 1970s vacuum tube and transistor radios had been replaced. The result was transceivers and cellphones that were tiny and powered by tiny batteries. It's been said that if a modern cellphone had to be made with vacuum tubes, it would fill a large room all by itself and it would need heavy cables for power. Besides, vacuum tubes could never do many of the things cellphones do because of their frequency limitations.

### **SATELLITE COMMUNICATIONS**

Another notable example of evolving technology has been the use of ham radio communications satellites. Soon after the launch of Sputnik by the Soviet Union in late 1957, hams envisioned satellites dedicated to use by hams. AMSAT (the Amateur Radio Satellite Corporation) was founded in 1959 and the first amateur satellite was launched three years later. A continuing problem for AMSAT is that launching a satellite is expensive even if the satellite was designed and built with volunteer labor. Hams have been able to obtain unsold payload space on rockets for free but that is still a challenge.

One way to spot a satellite ground station is to look for its distinctive antennas. The antennas will often be pointed upward and designed to track a satellite as it passes across the sky. The antennas will often be "cross polarized" with a set of horizontal elements (resembling rods) and a second set of vertical elements. This is done because the ground station must be able to track the satellite as it spins and is affected by its polarization. An antenna with horizontal elements is much weaker if it is trying to contact a station using vertical elements. The solution is for the earth

station to feed half of its power to vertical elements and the other half to horizontal elements. That is not a perfect solution because there are also polarization shifts as a radio signal passes through the earth's atmosphere. Contacts with satellites or the International Space Station are a common feature in school demonstrations of ham radio scheduled in advance by teachers and coordinated by ham radio organizations worldwide.

## FIELD DAY

Another new thing is the explosive growth of "Field Day". Field Day is mainly a weekend outing in late June that involves setting up a station (including antennas) in a park or on a mountaintop and then using off-the-grid power sources like generators or solar panels to run the station. On Sunday afternoon the antennas usually come down with dignity except when Murphy's Law applies (it says anything that can go wrong will go wrong). Clubs and other groups report having a total of 30,000 or more people participating in Field Day. Some are mainly chefs who serve meals or antenna-builders whose work is done before the actual operating begins. Some groups report that a few members do everything. The operating is not a contest, although it sounds like one. Some clubs have a turnout of more than 50 people; some are much smaller. There are also categories for people operating from home or a car.



Figure 6 The author's spouse, Carrie, W6TAI, operates N6NB's VHF contest rover setup. This shows equipment that was routine by the 2000s but would have been revolutionary before the solid state era. There are two transceivers that both cover 1.8 to 432 MHz o

## THE INTERNET AND AMATEUR RADIO

Obviously, use of the Internet is another new reality. Some hams spend more time talking to ham friends online than on the air. Most Internet sites have interest groups for hams and ham radio websites are everywhere. Some repeaters are linked to the Internet, allowing users of hand-held radios in California to chat with similarly equipped stations in Europe.

ARRL has a major Internet presence, including [ARRL.org](http://ARRL.org). It also has "logbook of the world" that makes it easy to win awards--provided the ham on the other end of each contact also uploads a log. [ARRL.org](http://ARRL.org) has many features, including news, technical content, and contest results. Many other hams have websites. Mine is [N6NB.com](http://N6NB.com).

## IN CONCLUSION

Over the last 68 years I've experienced many of the old and new amateur radio events and activities. It has been my pleasure to watch it all happen. I started when all radio equipment had vacuum tubes and saw the arrival of ham gear linked to the Internet.

I would like to thank my spouse, Carrie Tai, W6TAI, and my sister in law, Marie Tai, W1TAI, for their support. I also had help from hundreds of other people, both hams and people who never held a call sign. Some of them motivated me or helped me to publish 20 editions of a university textbook, "Major Principles of Media Law." Others politely listened to my annual talks about changes in the law affecting college student media at the Morro Bay faculty retreats of the Journalism Association of Community Colleges. Then there were hams who mentored me through several generations of amateur radio.

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*Wayne Overbeck, N6NB, is a friend to OCARC, and is a friend with many of us in the Club. Over the years, he has presented over a dozen programs to our Club, on a varied set of engaging topics. Wayne is the co-inventor of the world-famous 'Quagi' antenna and now the holder of the DX Microwave record of all time. Retired Professor of Communications, emeritus, from California State University in Fullerton with Ph.D and J.D. degrees. He authored 20 editions of a college textbook, "Major Principles of Media Law" The "Quagi" antenna, a combination of a quad and a yagi, was invented and developed in Wayne's back yard in 1972 and is still a favorite of VHF / UHF Amateurs all over the world. He was elected four times as Vice Director of the ARRL Southwestern Division. Wayne has appeared in cover stories of QST magazine 50 years apart! Wayne was honored in 1980 as the Dayton Hamvention Amateur of the Year. In 1996, Wayne's name appeared on the FCC's OET-65 bulletin as one of the committee members who developed the U.S. radio frequency safety standards. He integrated and mass-produced a "tool-box transverter" system that covers the Amateur bands from 6 meters to 10 GHz. His transverter systems were the key factor in OCARC's multi year wins of Winter Field Day. Wayne continues to inspire many of us in Amateur microwave and VHF/UHFcontesting.*

## OCARC Cash Flow - Year to Date

**1/1/2025 through 2/28/2025**

### INFLOWS

Badge	3.00
Donation	53.00
Dues 2025	390.00
Dues, PayPal 2025	1,083.00

**TOTAL INFLOWS      \$1,529.00**

### OUTFLOWS

Activities Supplies	128.31
PayPal Fees	56.12
Printing Brochures	265.80
Software License	59.88
Website	50.00

**TOTAL OUTFLOWS      \$560.11**

**OVERALL TOTAL      \$968.89**



**April 25-27, 2025**

**Big Bear Lake, CA**

**SCHEDULE OF EVENTS**

*(subject to change)*

Friday: ARES Bootcamp,  
POTA/SOTA Activation,  
Vendors and Exhibitors,  
Banquet.

Saturday: Seminars, Seminars  
and More Seminars,  
Workshops,  
Vendors and Exhibitors,  
Continental Breakfast.

Sunday: A Few More Seminars,  
Farewell Breakfast (possible),  
HamEscape Yard Sale.

...and more FUN still to be  
added!

*Big Bear HamEscape™ is an official ARRL sanctioned event!*

Join us for the Big Bear HamEscape™, a fun-filled event for amateur radio enthusiasts! Get ready for a weekend filled with exciting activities, informative seminars, and great networking opportunities. ARES bootcamp and POTA/SOTA activities are planned. Join meet and greets with author Gordon West, ARRL Orange Section, and YLRL. The event will take place at Holiday Inn Resort, located on Village Drive in beautiful Big Bear Lake, CA, USA.

**For More Info:**

<https://bigbearhamescape.com/>



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